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SCORECARD EVALUATION FOR PATENT INFORMATION PL-

Attached is MRCTEC Patent Information PL-98-86 that relates to lubricant formulations based on novel wax-isomerate (WI) base oils of the composition defined in an earlier Mobil patent application (Docket # 7972). Finished lubricants of this invention demonstrate a novel and unexpected combination of performance properties directly attributable to the unique molecular structure of the WI base oils: (a) good viscometric properties at both low and high temperatures, and (b) good biodegradeability.

In light of the recent information on Syntroleum activity in this area, and other Fischer Tropsch activity, we request that you file an application without rating. We understand that Technical Sales and Licensing strongly support progressing this without the formal rating.

Thank you for your assistance in this matter.

James R. Lohuis

James R. Lohuis, Manager
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rnt/K138
Attachment

Exhibit MDK-1

MOBIL TECHNOLOGY COMPANY

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INFORMATION FOR PATENT CONSIDERATION PL-

1) **DESCRIPTIVE TITLE:** Formulated Lubricant Oils Containing High-Performance Base Oils Derived from Highly Paraffinic Hydrocarbons.

2) **SUBMITTED BY:** Gretchen R. Hall, Nancy M. Page, Richard F. Socha, T. Reginald Forbus, David J. Baillargeon, Kenneth R. Graziani.

3) **DESCRIPTION OF CONCEPT**

a) Nature of Concept

Lubricant formulations based on novel wax-isomerate (WI) base oils of the composition defined in "Mobil Doc#7972 (WaxIsom COM)" demonstrate a novel and unexpected combination of performance properties directly attributable to their unique molecular structure. The WI base oils in the defined compositional range possess an unexpected combination of good viscometric flexibility (at both low and high temperatures) and good biodegradeability not available to other base oil compositions, and confer these unique advantages to their formulated lubricant products.

b) Possible Novelty

Formulated lubricants are based on WI lubricant base oils whose compositions are outside prior art (composition defined in "Mobil Doc#7972) and demonstrate a COMBINATION of (1) low-temperature performance not achievable by other base oils, including hydroprocessed base oils such as API Group III base oils, and (2) biodegradability greater than that achievable by other classes of base oils such as PAO.

The reasoning supporting the novelty of this invention is outlined as follows:

High-performance formulated lubricants depend heavily on the performance characteristics of the component base oils used in blending such products.

One traditional problem regarding lube oil performance is that of achieving a usable balance of both low-temperature and high-temperature properties. For example, modern multigrade engine oils demand significant performance both at low temperature (for cold engine starts, and oil pumpability) as well as at high temperature (resistance to oxidation and thermal degradation).

Table 1. Wax Isomerate Performance in 0W-40 Formulations

Base Stock	WI 4p40	WI 3.7p60	WI 4p60	PAO4	
MIDAS Nos.:	98-31411	98-1359	98-25478		
KV40	16.88	16.1	17.47	18.0	
KV100	4.02	3.74	4.06	4.00	
VI	141	122	135	121	
Blended Oils (API SJ Additive Components)					**API Limits**
SAE Level	0W-40	0W-40	5W-40	0W-40	SAE 0W-40
MIDAS Nos.:	98-36436	98-36035	98-49667	96-60116	
KV @100C (cS)	13.54	12.65	13.47	14.15	12.5-16.3
KV @40C (cS)	70.71	67.42	71.79	76.6	
Viscosity Index	198	190	193	194	
CCS @ -30 C (cP)	2800	3150	3340	3100	3250 max
HTHS @ 150 C (cP)	3.70	3.54	3.75	3.72	2.9 min
Pour Point, C (ISL)	-48	-48	-51	to be run	
MRV, -40C, Visc/YS	16800/<35	18370/<35	20000/<35	18000/<35	60000/<35 max
Gel Index (Scanning Brookfield)	3.3	3.3	3.4	4.0	12.0

Table 2. Wax Isomerate Performance in 0W-30 Formulations

Base Stock	WI 4p35	RLOP UCBO	Shell XHVI	
MIDAS Nos.:	98-31411	98-33297	96-54244	
KV40	16.88	18.72	16.45	
KV100	4.02	4.19	3.97	
VI	141	130	143	
Blended Oils (API SJ Additive Components)				**API Limits**
SAE Level	0W-30	5W-30	15W-30	SAE 0W-30
MIDAS Nos.:	98-45524	98-49665	98-45525	
KV @100C (cS)	9.78	9.61	9.75	9.3-12.5
KV @40C (cS)	50.0	51.6	49.65	
Viscosity Index	185	174	186	
CCS @ -30 C (cP)	2850	3780	3220	3250 max
Pour Point, C (ISL)	-46	-30	-22	
MRV, -25C, Visc/YS			4800<35	
MRV, -30C, Visc/YS			162000/<70	
MRV, -40C, Visc/YS	12500/<35	32600/<35	Too viscous to measure	60000/<35 max
Gel Index (Scanning Brookfield)	3.3	5.1	26.1	12.0

Table 3. Wax Isomerate Performance in 15W-50 Formulations

Base Stock	WI 8p60	WI 12p60	WI 8p40	WI 11p40	PAO8	PAO40	
MIDAS Nos.:	98-1270	98-1271	98-1255	98.1256			
KV40	50.71	81.88	43.32	69.66	47.1	411	
KV100	8.478	12.19	7.948	11.33	7.9	41.0	
VI	143	145	157	156	135	152	
Blended Oils (API SJ Additive Components)							**API Limits**
SAE Level	**15W50**		**15W-50**		**15W-50**		**SAE 15W-50**
MIDAS Nos.:	98-49668		98-49664		96-46713		
KV @100C (cS)	17.77		18.32		18.37		16.3-21.9
KV @40C (cS)	121.1		120.0		122.2		
Viscosity Index	163		171		168		
CCS @ -15 C (cP)	2660		2360		2420		3500 max
HTHS @ 150 C (cP)	4.97		5.17		4.68		3.7 min
Pour Point, C (ISL)	-51		-42		tbd		
MRV, -25C, Visc/YS	11200/<35		10700/<35		10700/<35		60000/<35 max
Gel Index (Scanning Brookfield)	3.2		4.0		3.1		12.0

Table 4. OECD & CEC Biodegradation of WI Base Stocks

Midas #	Base Stock	Biodegradation Results* OECD 301B	CEC L-33-A-93
-7030	WI 4cSt / -40C PP	65%**	90%
-25478	WI 4cSt / -60C PP	70%**	83%
-9297	WI 6cSt / -20C PP	68%**	96%
-1231	WI 6cSt / -40C PP	67%**	90%
-1266	WI 6cSt / -60C PP	55%**	51%
-67967	4cSt PAO	18%**, 37%**	34%

* unacclimated seed

** did not pass "10-day window" criterion

4) **POSSIBLE SIGNIFICANCE OF CONCEPT**

Wax hydroprocessing is evolving in sophistication to provide lubricant base oils of ever increasing performance. Wax feed stocks are likely to become a more readily available feed source for lubricant base oil production, with the advent of gas-to-liquids technology. High performance wax isomerate (WI) base oils with unique combinations of properties can be used to formulate premium lubricant products not otherwise obtainable.

5) **LABORATORY REFERENCES**

WI base oils and formulation examples are tracked by Midas laboratory numbers (see tables above).

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